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A SOCIAL STUDY.

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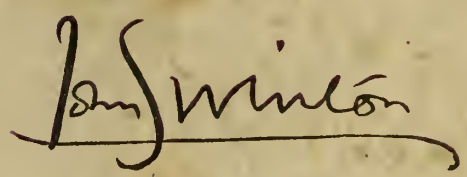

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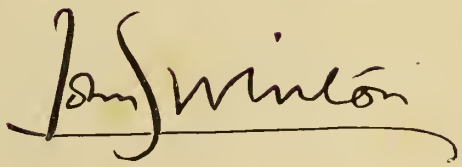

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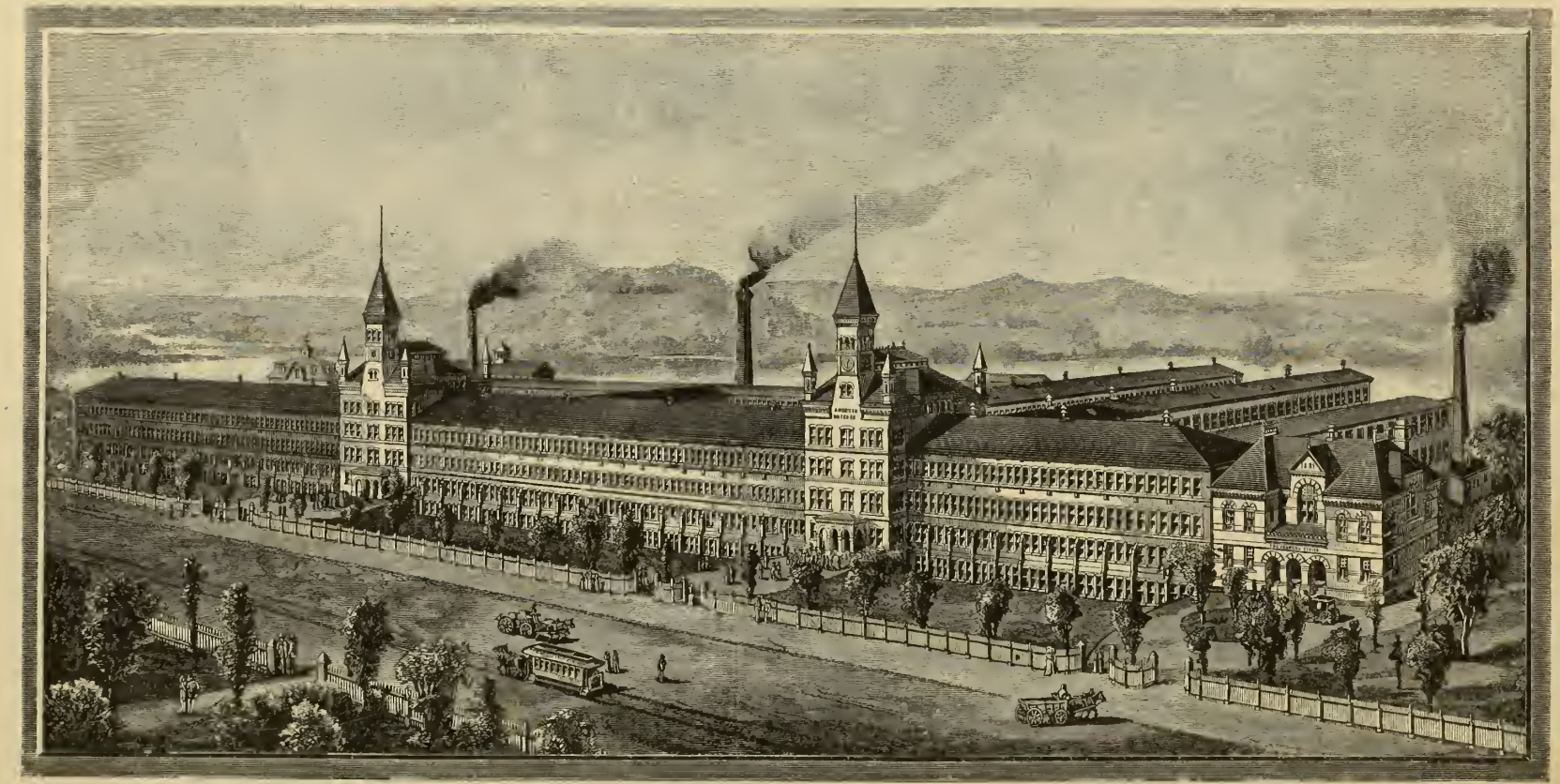
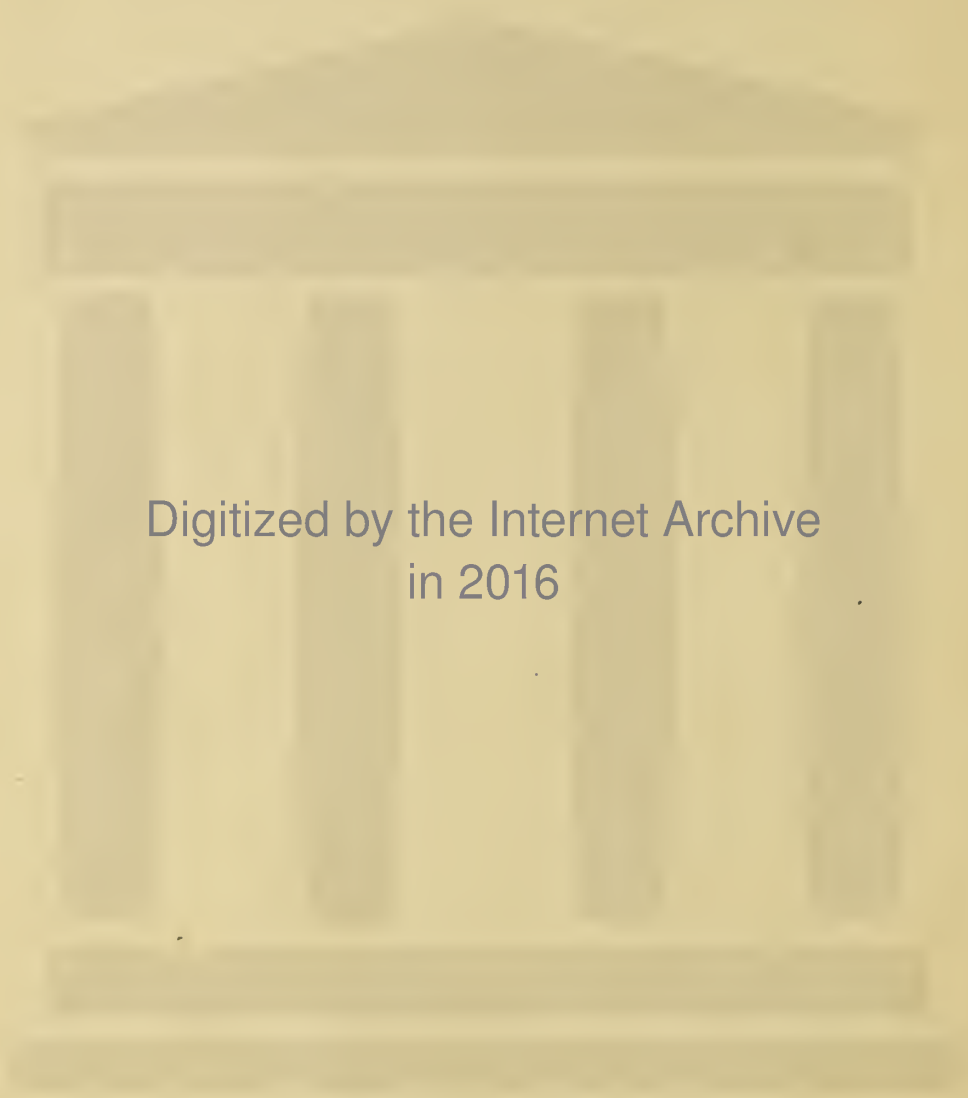


FACTORY OF THE AMERICAN WALTHAM WATCH COMPANY.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A MODEL FACTORY IN A MODEL CITY:

A SOCIAL STUDY.

In the State of Massachusetts there is not a lovelier or more attractive town than Waltham, on the Charles River, a few miles west of Boston. Signs of thrift and prosperity are on every hand. Everything looks "well kept." The people you see afoot, or in carriages, or around the houses; the boys and girls on their way to school; the infants in their dainty vehicles—all have a like look. To myself, just from the seething City of New York, the first sight of Waltham was a most enjoyable change.

THE WALTHAM FACTORY IN 1853.

Driving up a broad avenue, through a picturesque park, I found myself before one of the most remarkable industrial establishments ever built; the largest watch factory in the world, the oldest in the United States, the most perfect in every way, yet devised by human genius—the American Waltham Watch factory. It is a vast series of buildings presenting a frontage of nearly eight hundred feet, and with wings, towers, courts and offices. In front of it is the umbrageous park and behind it the gleaming river. Immediately in the foreground are lawns bordered and decorated with flowers and shrubbery, among which the ancient gardener is at work. It is a superb spectacle, thus to behold this vast hive of free and fair American industry amid scenes which show at once the character and spirit not only

of its founders, but also of its thousands of busy operatives of both sexes. When I was told that many of the elegant dwellings I had passed were the homes and property of the workmen in the factory; when I had seen a part of these cheerful workers crossing the lawns on their way to dinner; when I had caught a glimpse of some of them in one of the wings of the establishment; when I had looked at the product of their ingenuity and skill, I became deeply interested, and determined to stay a few days in Waltham, for the purpose of looking, not into the marvelous mechanism of this colossal workshop—all of which is beyond my comprehension—but into the life and ways of the twenty-five hundred men and women who swarm in the halls of this world-famous factory.

It is proper to say here that the growth of Waltham has been dependent chiefly upon that of the watch factory, the steady development of which, during the past thirty years has been an unremitting source of welfare to the whole population; and that it is by the resources and disbursements of this factory, and by the industry, intelligence and virtue of its operatives, that the hundreds of pleasant dwellings, of which one gets a bird's-eye view from the factory observatory, have been added to the city.

On my own account and by the desire of the courteous President of the Company, I made a thorough observation of the whole factory and all its features, from the engine room, through the numerous departments in which are carried on the delicate and complicated processes of watch manufacturing, involving I was told not far from four thousand distinct mechanical operations; and as I did so, I marveled not more at the automatic machinery which our inventors here put to service, than at the ingenuity and deftness of the men and women who perform such operations as are not within the scope of mechanism. I mingled freely for a whole week with the operatives, whose courtesy and intelligence made it pleasant to ask questions or to converse with them. I visited them at their homes in the evening, and inquired about their work, wages, ways of life and social enjoyments. Still further, I was assigned quarters in a great boarding-house for the gentler sex, established by the Company for those who desire to dwell in it, and where I took my meals thrice a day, with 150 of the young women employed in the watch factory. In short, I made a survey from workshop to domicile, from pay-roll to style of living.

THE CHARACTER OF THE WORKERS.

In the first place, I was struck with the *quality*, so to speak, of the operatives of both sexes. "You won't find a more independent set anywhere in creation," said a townsman of whom I made inquiry. I found the remark to be true. I saw no sign of subservience or slavishness, which as one is apt to look for in a factory. They are respected and self-respecting men and women, shrewd, intelligent, and of excellent demeanor. The men are clad for comfort; and the women, who are of course more tasteful in attire, do not, even in the factory, neglect those personal adornments which are the especial delight of the fair sex. In the faces of the operatives, instead of the pallor which one might expect to see, are health and vigor; and many of the young women display cheeks as rosy and eyes as bright as rustic school girls; and even after the day's work you will see them tripping along as nimbly as if they had passed the hours in play. While writing these very words, up in my quarters after supper, I hear, above the sounds of the piano, and the noise of the romping, the merry laughter from the groups of demure damsels down below, where parlor, halls and piazza are free for their service.

The heads of the establishment tolerate no tyranny or abuse by any of the foremen of the departments, or by anyone else; and President Fitch himself is an ever open and easily accessible court of appeal to any complainant. As a consequence of such things as are here spoken of, and also of the liberal scale of wages that has always been paid, there has never been a strike in the watch factory since it was established—in the year 1853—a fact that is probably unprecedented in the history of any other branch of industry in the United States. "The factory stands alone in this respect," said a Waltham editor to me, "as well as in respect to the condition of labor within its walls."

AN AMERICAN INSTITUTION.

Another rare feature of this factory is seen in the circumstance that nearly all of its people are Americans by birth. There are few other factories of any kind in the country, about which

this can be said. For many years Carroll D. Wright, Edward Atkinson, David A. Wells, and others, have been telling of the disappearance from the New England mills of the Yankee girls, tens of thousands of whom used to be employed there; and they have been telling of the influx from Europe and the British provinces adjacent to this country, of another class who put up with poor pay, hardships, and a kind of living which is certainly not conducive to their own welfare or to that of the community, and which just as certainly lowers the level on which American industry should stand.

ROBBINS PARK.

Let these gentlemen visit the Waltham Watch factory, and they will find that though there is not the slightest barrier against the employment of any one on account of race or birth, the workshops are filled by young men and women of the soil, almost wholly of New England lineage—the sons and daughters of the farmers, and towns-people who have given the New England States that character for which they have been so long renowned.

No question of child labor disturbs the watch factory, for the reason that it is not employed there at all. Boys from sixteen to eighteen years old, and girls of about the same age, are put to work at such branch in the factory as may be assigned them, and are advanced in pay as they acquire skill and efficiency. They are apt to stay there till manhood and long after, as children of a State which, not less than Connecticut, is the "land of steady habits;"—in fact, I found middle-aged men, who had been there from ten to twenty years, and elderly operatives whose term of employment dated back to the foundation of the factory.

As with one sex so with the other. The girls are taught in one department or another; but in their case there is always the likelihood that matrimony will, in course of time, take them out of the labor market. The work to which the softer sex are assigned is always of a lighter character and much of it is very dainty and delicate, requiring keen eyes and deft fingers, but neither trying to the mind nor injurious to the body. You often see their work-stands adorned with engravings or other fancies; and I found that there was danger of a visitor causing a smile all along the line if he chanced, for example, to have his beaver tilted at one side as he meandered through the departments. I mention such trifling incidents merely as

illustrative of the presence here of a spirit wholly different from that crushed and cringing spirit which you often see in other factories. Throughout this great army of systematic operatives, there are order and discipline, both of which are, as they must be, perfect from the time the engines start until they stop. This does not, however, imply the hardships with which these terms are often confounded, and they may not be incompatible with even a casual smile or twinkle, or whisper, or picture on the wall.

The welfare of the workers in the watch factory has conduced, in every way, to the advantage of its owners, and mutual respect has led to mutual benefits. There is here a measure of coöperation such as I have seen nowhere else between employés and employers. They strive to promote each other's interests and only those who are behind the scenes in a great manufacturing establishment can comprehend the extent to which the common prosperity may be thus promoted.

PUBLIC DIGNITARIES.

I have so far spoken in general terms of the character and condition of the work people in the watch factory, but now in the way of illustrative facts, take a few like the following:

The Mayor of Waltham (an incorporated city of 16,000 inhabitants) is an employé of the Watch Company, and at this very time holds office while at his daily work in the factory. I am told that about half of the Aldermen of the city work in the factory, performing their public duties in the evening as the Mayor performs his. There are many other workmen in the factory, who take an active part in the city's affairs. I find also at these benches many capable of exhorting, or leading in prayer, or singing in the choir. This is a novel state of things to me, and I confess that it seemed very curious, when I first passed through the factory, to be introduced to a foreman in one of the departments as Mayor Fisher, and still more so, when, within a few moments, I was introduced to four Aldermen, one deacon, two directors of the public library, the chief of the city fire department, several militia officers, and a member of the brass band belonging to the factory, which gives performances in Robbins Park, and is said to be one of the best bands in the State; all of these dignitaries being factory operatives, drawing their weekly wages; men who feel neither above their places in the workshop nor below their dignity as municipal functionaries. I need not tell how I had reason to believe that there were also Knights of Labor here, plying their trade of watch making, but it is just as well to say that the right of organization is never interfered with by the Company, and could not be.

Still further, I find that quite a number of the workmen, besides owning their houses, are stockholders in the Company, among which are also several of the women, drawing their dividends as regularly as their salary. Such men as I have spoken of are not by any means "tools of the Company," but have their full share of Yankee independence, political and social, and are not the least afraid to show it, when it is called for. You find among the female operatives plenty of accomplished women who, as we say, "move in the best society" of the place, but of whom it were better to say that they *are* the best society in the prosperous City of Waltham.

INTELLECTUAL LABORERS.

"You can't find in any other factory," said boarding-house keeper Hight to me, "such an intellectual class as these people are here." I found that among those who had been graduated, so to speak, within a few years, there are not a few who have become distinguished in other vocations. Among the examples given me I notice six physicians, two editors, three clergymen, seven lawyers, two artists, one college professor, one veterinary surgeon, and one actress, besides teachers and others in various professions. I had the happiness, while in town, of becoming acquainted with both of the editors, who are of opposite parties in politics, but who agree in speaking with pleasure of their years of life in the watch factory.

It does not seem necessary to say here that such a thing as drunkenness is almost wholly unknown among the men in the watch factory, and so far as they are concerned, there does not appear to be any need of Prohibition, which has been adopted by the people of Waltham under the "local option" law of the State.

I have spoken of the boarding-house for female operatives, maintained by the Company, which looks for no profit from it, and there is a like institution for the men, not thus maintained, though the Company, which gave it certain privileges, prescribes that the price of board in it shall be fixed at a low rate. But it must be noticed that it is a privilege, not a requirement, for anyone to board in either of these houses, and it must be also understood that only a very small proportion of the workers in the watch factory live in them. Many, as I have already said, dwell in houses of their own, and the remainder, or the great majority, find such quarters as suit them, with the families of fellow operatives, or in other households of the city. There is, as a matter of course, the utmost freedom for every one in this respect. The advantage that the Company secures to the employés by the two big boarding-houses under its supervision, direct and indirect, is that by this

A DEPARTMENT IN THE FACTORY.

means the prices of board are established for the whole town, so far as concerns the watch factory men and women, at as low rates as are consistent with good living and proper quarters.

THE OPERATIVES.

The precise number of operatives in the watch factory during the week of my visit was 2,471, of whom 1,350 were males and 1,121 females. The majority of the women are about twenty years old, and unmarried, but adding to these such as are of longer service, the average age of the whole body is twenty-six. To be exact about the matter of matrimony, the total number of wives in the factory, most of whom accompany their husbands to work, is 224, or just one-fifth of the whole, thus showing that not fewer than 897 are yet enjoying the bliss of maidenhood. The majority of the men are about thirty years old, but the average age of the entire number, is thirty-two.

The proportion of the males who are married is far greater than that of the females. In truth, the majority of the former are married, as appears by the fact that out of the whole 1,350 just 621 suffer the solitude of bachelordom, and many of these are too young for wedlock. An interesting subject for study is suggested by the comparison just made, but it must be avoided at this time.

I have already spoken of the predominance of operatives who are of American birth, and after tabulating a mass of facts which were procured for me, I find that of the total force only 120, all

told, are of foreign birth, not a few of these being natives of the British Provinces. All the operatives of both sexes have enjoyed a common school education. The day's work in the watch factory is ten hours, except Saturday, when it is nine, making fifty-nine hours for the week, or one hour less than the time prescribed for youths by the Massachusetts factory law. The women do not work overtime at any season of the year, and it is rarely that the men are ever asked to do so; and on such occasions, of course, extra pay is given. There never was any Sunday work in the watch factory. In midsummer, there is a fortnight's vacation for all hands, and every holiday of the year is observed.

WAGES.

The account books of the watch factory, indicating the pay of all hands for each and every week of the year, were placed at my service. It must be premised that all the work, so far as possible, or perhaps three-quarters of it all, is done by the piece, or, as it is here called, by "the job;" and it must be further understood that the clause in the "Declaration" of the Knights of Labor which provides that "women shall be paid equally with men for the same work," is rigidly observed. But the variation of earnings in the several departments, or according to the measure of capacity in the operatives, is large.

There are a few men of exceptional skill who earn as high as $4.50 or even $5.00 per day, and I find, in the account of one department, the sum of $5.50 set opposite a man's name; but the average wages of the best-paid men in the twenty-three departments of the factory is $4.00 per day, and of the best-paid women $1.75, though there are female operatives earning as high as $2.60 per day. Taking the whole body of male employés, of every grade and all degrees of competency, the average wages per week are $15.24; and taking the female employés in like manner, the average wages are $7.76, or somewhat more than half the average of the men. It must be remembered that these averages include girls and boys of all ages, and beginners of all grades. Furthermore, as regards the average earnings of the women, allowance must be made for the fact that the number of inexperienced operatives of their sex is far greater than that of the other.

A DEPARTMENT IN THE FACTORY.

The business of watch making, as here practised, is subdivided into very many branches, requiring as many different machines; in fact, I am told that there are no less than 3,746 distinct mechanical operations in the making of a stem-winder, while an ordinary watch requires 150 separate pieces, and many classes of the workers perform only a single simple operation continuously, such as boring a little hole with the needle of a machine, or polishing an almost invisible edge, or making a nice adjustment of some of the minute parts. The earnings of such workers are, of course, less than of those who are engaged in branches that require hard training, rare expertness, or special knowledge. I find that in several branches the average weekly wages for men are not over $11 or $12, while in as many others they run from $16 to $20, or even over; and I find, also, in looking over the rolls, that the earnings of the other sex are largely dependent upon the special character of the work on which they are employed. But I have given enough figures for the reader to form a general judgment upon the whole question; and, in order to compare the statistics of wages here quoted, with those of other industries in Massachusetts, he may consult the reports of Carroll B. Wright and the National Census.

AT THE ADAMS HOUSE.

As already mentioned, I was permitted to stay a week in a boarding-house where one hundred and fifty of the young women, a very few married couples, and a half-dozen bachelors boarded. I wanted to see for myself the home life of this portion of the operatives, and I was assigned to a room among the dormitories on the second story, and to a place among other boarders at the table. The house is a large four-story, single-winged wooden structure, with portico and piazza, and surrounded by grass-plats. Its whole business is managed, in behalf of the Company, by a janitor and his wife, who procure the supplies, hire the servants, superintend the kitchen, provide the table, and look after the general service. There is a dining hall capable of accommodating the whole body of boarders at once. The bed-rooms are plainly furnished, well lighted, well ventilated, and heated by steam pipes. My room, which is like the others, has papered walls, a large rug on the floor, a table, a washstand, a chest of drawers with looking-glass, an arm-chair, a rocker and an ordinary chair, and a broad bed which is comfortable and clean. At one side is a small closet in which trunks and clothes can be kept. On the walls are a few pictures.

The housekeeper informs me that the young women take care of their own rooms, and keep them tidy, adorning them with engravings, knick-knacks, books, growing flowers and pretty trifles. There are two large parlors, open at all hours to every boarder, and there is no restraint upon the freedom, merriment and movements of the inmates. I found the appointments and conveniences of the establishment to be excellent in every respect. I found the table supply to be varied and abundant, or rather superabundant. The bill of fare for the first day may be given here as a fair example of the daily table. The house bell was rung at six o'clock, and in half an hour we were all ready for breakfast, which, too, was ready for us. We had the best of beefsteak, with baked potatoes, boiled eggs, white and brown bread, biscuits, doughnuts and snaps, butter and condiments, coffee and tea. Clean table napkins were beside every plate. At a few minutes after twelve the great rush of the hungry damsels is repeated. For dinner we had soup, scalloped oysters, roast beef and mutton, boiled potatoes, celery and pickles, pudding and pie, with tea, coffee and pitchers of milk. For supper we had cold meats, cheese, various kinds of bread and "fixings," and again coffee, tea or milk. Another day we had poultry at dinner; another morning we had country sausage, besides omelette, and chops, as well as ham, for breakfast; another evening we had canned fruits with our supper. At all the meals throughout the week there were daily variations in the fare. As for the appetites, so far as a stranger could take notice of such a thing, they were somewhat amazing to a man who is unaccustomed to sitting down at table with such an array of Yankee girls.

In the evenings there were lively times all over the house. Bevies of girls were seen everywhere. They sang, they romped, they thrummed the piano, they played games, and a few took side-long glances at the visitor, who gazed with interest upon them. Some of them went out a-visiting or a-shopping. Some went to "sociables," public or private, some attended the grand and dress reception to invited guests in our big parlor; two or three more may have gone to prayer-meeting;

a half-dozen struck into a walking match on the highway; some gathered in gossiping groups, while others, I was told, stayed in their rooms to stitch, or to read or write. Soon after nine o'clock they begin to retire, and by ten all is quiet in the house, though the watchman is always there to answer the bell.

THE COST OF LIVING.

The price of board and lodging for women in this establishment (two in a room) is fixed by the Company, which owns it, at three dollars per week, and this rate, as has already been said,

THE ADAMS HOUSE.

influences, if it does not always fix, the terms at other boarding-houses in the city for female operatives, though of course when larger quarters are required the prices are increased. The Company is satisfied when the income of the establishment, which is called the Adams House, meets the running expenses.

At the boarding-house for men (Shawmut House) where the Company's only authority is in fixing the rates, the price of board for men (two in a room) is four dollars and a half per week, and three dollars for their wives. There are many women and men who take only their meals in these boarding-houses, and secure elsewhere such lodging as may suit them. All these matters are at their own option. It is hard to see why the rougher sex should have to pay one-third more than their sisters for victuals and quarters, but doubtless, after all, the cost of feeding men is greater than that of nourishing women. On Sunday only two meals are given at the various boarding-houses, but in the afternoon an extra grand and generous dinner is provided.

I have had opportunity to see something of the home life of such of the watch factory operatives as own their domiciles or rent houses, many of whom take their co-workers to board. In brief it is the New England home-life, quiet and kindly, in tastefully furnished cottages, most of which are two stories and a half, separated from each other by fences, enclosing grass-plats, trees and flowers. The fare at the table of the families is very much like that of my temporary boarding-house, though household economies are apt to be more carefully observed. Some of

the operatives who have risen to more than ordinary prosperity live in domiciles more spacious than those of their less successful brethern; and in looking at some of them, as I walked one night with a town officer through the streets, which are bordered with trees, it was hard to believe that they were the homes and property of wage-workers, employed in daily factory labor.

OWNERSHIP OF DOMICILES.

Over one-fourth of all the married workers in the watch factory are owners of the houses in which they live, or to be exact, 190 out of the 729; and the proportion of these house owners has steadily increased year by year. The greater part of them have gained their property out of their earnings within the past ten years, though some of them hold titles dated before that time. The Company has always encouraged them in this course. It has sold to them, at low prices, lots from the body of land which was purchased some time after the establishment of the factory. In many cases it has aided them with loans of money, and otherwise assisted them; and above all else, it has guaranteed them steady employment, whereby they were enabled, not only to clear off all encumbrances, but to enjoy their possessions in safety. There has been no trouble in the practice of this system, and in nearly every instance, all loans have been paid with regularity and promptness. There is also in Waltham, a co-operative loan association, started mainly by workers in the watch factory, which furnishes money to those desiring to build, the amount borrowed being payable in monthly instalments. The value of the houses built and owned by these workers, including the ground, ranges from $2,000 to $5,000, and nothing could be more noteworthy than the contrast between them and the tenement houses of New York, in which myriads of families cluster. Besides the houses referred to, the Company has built many others, and sold them on easy terms to its employés; and it has built yet others which are rented at low rates.

DINING ROOM IN THE ADAMS HOUSE.

In short, it has been the steady and uniform policy of the managers of the Watch Company to induce every man in the factory to become the owner of his own house, so that, in the language of the prophet, he may "sit under his own vine and fig-tree, with none to molest or make him afraid." While doing this, it has refrained from interfering in the slightest with the spirit of independence which ought to be the pride of every American citizen. The evidences of this fact were given to me by the operatives themselves. As a stranger wholly unknown in Waltham, I sought everywhere, and among all sorts of people, including even discharged employés, to discover some slumbering discontent or some adverse criticism upon the ways or workings of the watch factory; but no such thing could be anywhere found by me.

A LOW DEATH RATE.

One of the facts which has surprised me most, in studying the state of things in the watch factory, is the extraordinarily low rate of mortality among the operatives. I find by the carefully kept records of each of the departments that it is below a half of one per cent. per annum. This is, of course, owing partly to the healthfulness of the locality, partly to the absence of child labor from the factory and partly to the excellent sanitary conditions in which the buildings are kept at

every season of the year. It is, nevertheless, proof of a wonderful measure of welfare in the lives of the 2,500 workers now under review. It would not be hard to mention factories in which the death rate runs as high as three or four per cent. per annum.

MUTUAL AID.

To secure the advantages of mutual help in case of need, the operatives established the "Watch Factory Mutual Relief Association," the Constitution of which lies before me. It has 1,428 members of both sexes, more than one-half of them being women. Its object is to furnish aid in case of illness. Among other features of the Constitution, it provides for a Visiting Committee whose duty it shall be to render timely assistance to sick members, who are entitled to draw from the treasury the sum of $4. per week. In the event of death $50. is paid for funeral expenses. The dues of members of the Association are twenty-five cents per month, and the Company makes a yearly contribution of $200. to the treasury. The excellent working of the organization is seen in the fact that at this time it has a surplus fund of $1,000.

In explaining matters to me, the Secretary made the curious and surprising statement, which was based on the records, that though the female members are more numerous by one hundred than the males, the latter have always made the bigger call on the funds of the Association. This fact certainly speaks well for the health of the women. At the same time, in view of the lightness of the dues and the amount of relief given, the state of the treasury speaks well for the health of the whole body of watch factory operatives. I commend these significant figures to the study of all members of similar associations everywhere.

METHOD OF DEALING WITH GRIEVANCES.

Even in the celestial spheres, according to the poem of Ralph Waldo Emerson, there are disputations like that which Abdiel held with Uriel about the "being of a line," and in this watch factory also there are occasionally, though rarely, questions in dispute. Any aggrieved person in the factory is invited to state his or her case at any time to President Fitch, who immediately considers it, and it was my fortune to see one grievance terminated in a very prompt and pleasing way. All appeals of individuals are settled with speed and courtesy. If the grievance is on the part of a number of people, the aggrieved appoint a committee to present their case, experts are called in, the foreman of the branch is sent for, and the matter is settled in joint conference of both sides, somewhat after the manner of arbitration. The cases of moment that arise are very few, not more than three or four in a year. All grievances are and always have been settled amicably.

Surely, when we take into account the very large number of work people in the factory, the magnitude of the interests on both sides, and the complicated nature of the questions that must necessarily arise at times in such a business, we must admit that this is a record of honor to all parties. Both the Company and the operatives have proved faithful to all agreements made between them, and the assurance of this came to me in uniform testimony, not only from the managers, but also from the workpeople with whom I mingled for a week. Mutual confidence is the ground work of successful coöperation.

LEISURE HOURS.

In making the acquaintance of the men of the watch factory, I soon learned of various clubs and other social institutions of the locality. Some of them are members of a club possessing a reading room and a billiard room at which I was entertained. Some of them belong to the Bicycle Club, the Canoe Club, or the Literary Club. There are plays, concerts and dances from time to time; there are performances in the summer months by the factory brass band; there are boat races and there is a Rumford course of lectures in the winter season. Besides, it is but a short and cheap trip, to Boston, and every night parties are on their way to and fro. In brief, there is no lack of social entertainments for the leisure hours of the people. On Sundays the workers if so disposed, can choose any one of the half-dozen churches in which are preached the varying dogmas of the old lights and the new lights, from Catholicism to Congregationalism and even to Swedenborgianism.

At first it seemed that the girls were unduly demure, in accordance with the New England tradition of their grandmothers; but I soon had reason to know of their sprightliness and merriment. They walk out in the evening without escort, but generally in pairs or groups, and you often hear of their taking trips to Boston or other adjacent cities in the same way. Marriages between operatives in the factory are occasional. I must add that if the men, when you see the whole body of them emerging from the factory as the noon-day bell strikes the dinner hour, have a hearty and stalwart appearance, you do not need to look long to discover in the procession plenty of young women with handsome figures, pretty faces, and the mien of well-poised womanhood. I am told that in the summer season many of them wear white dresses when engaged at their delicate and cleanly work in the factory. Let it here be said, as a finality, that the decorous conduct uniformly observed between the two sexes employed in the watch factory, is a pledge of that moral quality which is more valuable than all else to the individual and to the community.

About the inventions and the machinery of this colossal factory, which constantly surprises you by its novelty, ingenuity, efficiency and beauty, as you walk for hours through one department after another, and from class to class of the workers, all prosecuting separate but mutually dependent branches of the one great industry, I can say nothing that would be useful. About the magnitude of the product of an establishment that has made over three million of watches, and that has for years past turned them out at the rate of 360,000 per year, it is unnecessary to say anything. About the merits of the workmanship, and the quality of the article, and its worth as an exponent of the superiority of American inventive genius, the testimony must be left to the wearers of these three million watches, and to the medals, diplomas and encomiums sent from the great international expositions of the world. All such matters are beyond my purview in making these brief observations upon my study of the industrial and social life of the men and women of the Waltham watch factory in the first week of this month of October, 1887.

EAST BROWN STREET.

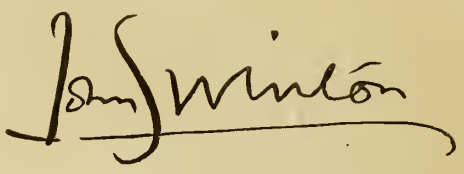
CRESCENT STREET.

This great, remarkable and successful manufacturing establishment is not run by persons claiming to be philanthropists, but by practical and experienced business men who fully understand the elements and forces with which they work, and know how to put them all to the best account, with the largest results.

THE DIRECTING HAND.

I had almost finished my visit to Waltham before I had the opportunity of meeting Mr. Robbins, the treasurer and the acknowledged head of the factory. In the course of a very pleasant conversation with him I asked him how he justified to his stockholders the large expenditure he must have made of the Company's money in establishing and maintaining the beautiful parks,

lawns and gardens surrounding the works, in accordance with a policy so different from that of most manufacturers. He replied that the Company had no other money half so profitably invested, and that that was justification enough. It paid, he said, in many ways; in the value it added to the Company's other land and cottages, in the stimulus it gave to tasteful building and gardening in the neighborhood, which had in the course of thirty years thus become the most beautiful manufacturing village in the country. All this is greatly to the advantage of the employés, who are now owners of nearly the whole place. But Mr. Robbins thought that the chief value of agreeable and wholesome surroundings was in their moral influence upon the workpeople, and that, leaving out of consideration the obligation as well as the delight an employer should feel in providing for his employés the best practical conditions of labor, it is clearly his best interest so to do. Anything that tends to lighten the strain of labor upon the mind, or serves to promote cheerfulness and contentment, is an economical advantage. In short, Mr. Robbins claims that he serves his Company best when he secures at any expense a willing and contented service from his employés. Nevertheless, Mr. Robbins will be remembered hereabout not less for his real regard for all those in his pay than for the enterprise, the courage, the faith and the persistence in all times, good and bad, which have during long years distinguished the conduct of his responsible office.



FACTS CONCERNING THE WALTHAM WATCH FACTORY.

The buildings, which are of brick, are mostly four stories in height, and nearly all have been rebuilt since 1876. They have a frontage of 646 feet, with numerous wings, which if stretched out in a single line, would make a building over 2,200 feet, or nearly half a mile long. They contain over 3,300 windows and about five acres of floor.

Most of the work benches are of cherry plank, two feet wide and two inches thick, and are in all about three and one-half miles in length.

The buildings are protected from fire by about 1,600 Automatic sprinklers, and nearly 700 Hand Grenades, besides ordinary hydrants and fire-hose and a large fire pump.

The machinery, all of which has been designed and built in the factory, has cost over one-half million dollars. It is driven by over 5,000 pullies and about eight miles of belting from two miles of shafting, with power furnished by a Corliss engine. Steam is furnished by five boilers of 60 horse-power each. The engine room is 34 by 42 feet and 24 feet high; is finished in pine and cherry with slate dado and floor of maple and iron tiling, and is pronounced the finest engine room in the country.

The artificial light needed is furnished by over 4,000 gas burners, about 700 Incandescent electric lamps and two Arc lamps. The electric current necessary for the purpose of lighting, electro-plating, signal and for bells, etc., is generated by six dynamos and an electric battery with 700 cells.

The factory is equipped with a complete telephone system, comprising 30 telephones and a central office, by means of which each of the 23 departments can communicate with the other and with the Superintendent.

Gas is used as fuel in 38 furnaces and 14 additional furnaces use coke or coal.

More than 13,000 gallons of water are used daily, and the pipes for water, gas and steam aggregate about 24 miles in length.

An ordinary watch movement is composed of upwards of 160 pieces requiring for their production about 3,750 distinct operations.

In the plate room where the pillar and top plates are manufactured there are 157 operations.

The capacity of the factory is about 1,800 movements and 600 silver cases per day, and to enable the work to be done to advantage, 120,000 complete movements must be in process continually, in addition to almost countless numbers of separate parts, constantly produced by the numerous departments.

In a single department are 41 automatic machines whose aggregate daily product is about 16,600 pieces.

The most expensive single piece in a watch is the balance, which undergoes not less than 85 distinct operations in its manufacture. It has a bi-metallic rim in which are 24 holes for the reception of screws, which are of various metals and vary in size, weight and position according to the requirements of the hair-spring and adjustments. Each balance has its own hair-spring and each watch its own balance, but the balance and hair-spring do not meet till they come together in the complete watch.

The hair-spring of an ordinary 18 Size watch is 12 inches long, and weighs $\frac{1}{9000}$ of a pound. It is .007 of a centimeter thick, and .025 wide.

The parts of a Waltham watch are interchangeable, enabling watchmakers to keep in stock all the material (hair-spring, main-spring, regulator, escape wheels, pinions, etc.,) that may be required for repairing. The Company can always supply promptly duplicate parts of any of its watches.